

**Transforming the Force:  
The 11<sup>th</sup> Air Assault Division (Test) from 1963-1965**

**A Monograph  
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## Abstract

Transforming the Force: The 11<sup>th</sup> Air Assault Division (Test) From 1963-1965,  
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Today's Army has gone through some incredible transformations since the end of the Cold War. Since then, the Army has struggled with Force XXI concepts, and more recently, the concept of the "Prototype Brigade." This monograph examines other periods of transformation to determine whether any of the lessons learned can be applied to current force structure changes. Specifically, the monograph conducts an in-depth study of the 11<sup>th</sup> Air Assault Division (Test) from 1963-1965, when the Army conducted extensive experimentation with airmobility and helicopter operations.

The monograph begins its study with an examination of a framework for analysis. Using the US Army Training and Doctrine Command's "domains" of Doctrine, Training, Leadership, Organization, Material, and Soldier Systems (DTLOMS), the monograph first proves that this is a valid methodology for analyzing change. It does this by showing that all "revolutions in military affairs (RMA)" have occurred when the DTLOMS all converge to provide a synergy to each other. Once the framework of DTLOMS is shown to be valid, the monograph applies the framework to the transformation of the US Army to airmobility in the early 1960's.

The conclusions that the author reaches is that for change to be lasting in the US Army, there must be the impetus for change provided by the Army leadership. The US Army Tactical Mobility Requirements Board, commonly referred to as the Howze Board provided this impetus in the early 1960's and produced a lasting change that is still manifested within the current US Army force structure. It takes this type of leadership in order to make changes to a historically conservative organization, such as the US Army.

## **Table of Contents**

	Page
I. Introduction .....	1
Method of Evaluation... .....	4
The Goals of this Monograph .....	6
II. DoctrineTLOMS .....	7
III. DTrainingLOMS.....	12
IV. DTLeadershipOMS .....	18
V. DTLOrganizationMS .....	24
VI. DTLOMaterialS .....	30
VII. DTLOMSSoldier Systems .....	35
VII. Conclusion .....	39
Endnotes .....	45
Bibliography .....	49

# Introduction

*"From the experience of this 'saddle controversy,' we young officers drew one important lesson which would stand us in good stead. There is always resistance to change in established habits, to traditional customs, and to familiar equipment. And this resistance is always extremely difficult to overcome."<sup>1</sup>*

- GEN (Ret.) Lucian K. Truscott, Jr.

At exactly 10:48 am on the morning of 14 November 1965, eight UH-1 (Huey) helicopters carrying Captain John Herren's B Company, 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry Regiment landed in a small clearing in Vietnam known as Landing Zone X-Ray. Accompanying the troopers of B Company was the battalion commander, Lieutenant Colonel Harold G. Moore. In less than ten seconds, the helicopters had emptied their loads and moved away to allow the next eight Hueys onto the landing zone. Within ninety minutes, the battalion had deposited over 300 men on the landing zone with the remainder of the battalion still to come. At 12:15 PM, the first shots rang out of what was later to be known as the Battle of the Ia Drang.<sup>2</sup> By the end of the battle at Landing Zone X-Ray, the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry had suffered 79 killed and 121 wounded. During the intense two-day firefight, the battalion practically destroyed the 66<sup>th</sup> Peoples Army of Vietnam (PAVN) Regiment with casualty estimates of more than 600 dead and total casualties of 1,215.<sup>3</sup> On 16 November 1965, the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry was relieved on Landing Zone X-Ray by the 2<sup>nd</sup> Battalion, 5<sup>th</sup> Cavalry and the 2<sup>nd</sup> Battalion, 7<sup>th</sup> Cavalry. AT 11:55 A.M., 16 November 1965, the first UH-1's landed on X-ray and

picked up the remnants of C Company, thus ending the two horrific days of intense combat on a small clearing about the size of a football field.<sup>4</sup>

The Battle of the Ia Drang was a seminal event for the United States Army. Not only was it considered the first battle between regular soldiers of the US and North Vietnam, it also hailed the formation of an entirely new type of fighting force, the “airmobile division.” The US Army used the results of the Ia Drang campaign to tout the concept of airmobility. As the commanding general of the 1<sup>st</sup> Cavalry Division, of whom the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry was a part, Major General Harry W. O. Kinnard stated, “we are freed from the tyranny of terrain.”<sup>5</sup> The use of helicopters to transport soldiers to the battlefield would become a major component of the tactics of the war, so much so that it became a symbol of Vietnam. Even today, the legacy of the airmobile division lives on in the form of the 101<sup>st</sup> Airborne Division (Air Assault), stationed at Fort Campbell, Kentucky.

The history of the 1<sup>st</sup> Cavalry Division (Airmobile) in Vietnam actually began on 15 February 1963 when the 11<sup>th</sup> Airborne Division was redesignated as the 11<sup>th</sup> Air Assault Division (Test). This division, organized as a tactical training and experimental test bed, was tasked with the mission of determining how helicopters could be integrated into tactical operations. The division operated with a mandate from no less than the Secretary of Defense Robert S. McNamara, who instructed the Army leadership to “examine aviation in a new light and to be more audacious in using it.”<sup>6</sup> With this guidance, the Army began a revolutionary set of experiments that would result in the approval of the concept of an airmobile division. The 11<sup>th</sup> Air Assault Division (Test)

would be redesignated on 1 July 1965 as the 1<sup>st</sup> Cavalry Division (Airmobile) and deploy to Vietnam on 28 July 1965.<sup>7</sup>

Given the current focus on restructuring the Army with the development and experimentation of the “prototype brigade,” it is extremely useful to examine how the 11<sup>th</sup> Air Assault Division conducted its experimentation and development. Taking the lessons learned from the 1960’s and applying them to the prototype brigades may allow us to avoid some of the pitfalls that the 11<sup>th</sup> Air Assault Division discovered during their experimentation. Likewise, the Army can also benefit from a study of the positive aspects that came from the organization of the 11<sup>th</sup> Air Assault Division. However, there have been other experiments conducted in the past, such as the 7<sup>th</sup> Cavalry Brigade from 1930 to 1940. At Fort Knox, the 7<sup>th</sup> Cavalry Brigade (Mechanized) formed the core of the Army’s experimentation with mechanization between World War I and World War II. Formed out of two cavalry regiments, the 7<sup>th</sup> Cavalry Brigade (Mechanized) would eventually become the 1<sup>st</sup> Armored Division in 1940, and would form the backbone of the mechanized US Army that eventually triumphed in World War II.<sup>8</sup> However, the fundamental difference between the transition to airmobility in the 1960’s and the transition to mechanization in the 1940’s was that the US Army was “flying blind” during this period. While many countries were experimenting with mechanization in the inter-war period, the US Army was the only force that would conduct wide scale examination of the use of helicopters in tactical operations. In this fact alone, the transition to airmobility was unique in the history of the US Army. Likewise, the current attempts to transition to a 21<sup>st</sup> Century force appears to have no precedent. Like the US Army in 1960, the US Army in the year 2000 is potentially “flying blind.”

## A Method of Evaluation

One historian defined a “military revolution” as a “complete and fundamental shift in the nature of armies and warfare.”<sup>9</sup> In his book dedicated to the current “Revolution in Military Affairs (RMA),” John Arquilla states that an RMA contains elements of technological, organizational, and doctrinal innovation.<sup>10</sup> Jeffrey Cooper asserts that an RMA has the elements of “military technologies and systems and involves complex operational and organizational issues.”<sup>11</sup> At the same time, he understands that there are multiple ways of viewing an RMA.<sup>12</sup> This is a tacit acknowledgement that the concept of an RMA is useless to military professionals unless it can be defined with some concrete parameters. However, the US Army has a useful doctrinal approach that can be applied to the concept of RMA, even though it is not portrayed in that vain. This concept is the use of the elements of doctrine, training, leadership, organization, material, and soldier systems, also known as DTLOMS.<sup>13</sup> In order to have a true “Revolution in Military Affairs,” it takes all elements of the DTLOMS converging on and complementing each other to produce the synergy necessary to enact a revolution. All other periods that these elements do not produce this synergy simply represent normal evolution in the military elements. An example of this synergy of the elements of DTLOMS can be found in the Napoleonic system of warfare in France in the 1800’s.

In the first case, Napoleon produced a military system that dominated Europe for almost a decade in the early 1800’s. Under Napoleon, the military he developed made use of all elements of the DTLOMS in order to vanquish his opponents. The first element of the DTLOMS, doctrine, was espoused in Napoleon’s writings. This doctrine manifested itself in the belief that an army must “make war offensively” while operating

with the confines of certain immutable “principles of war.”<sup>14</sup> Coupled with this doctrine, the Napoleonic system made use of the “corps d’ armee”, an extremely flexible organization that Napoleon was in the “habit of continually altering...”<sup>15</sup> However, the organization of this large army was not possible without changes to training and leadership. In the training element of DTLOMS, the rapid expansion of the French Army in 1793 created problems with training new draftees. This was solved by the “amalgamation of 1793-1794” in which regular units were broken up and farmed out to new conscript units, in order to train the new recruits.<sup>16</sup> The leadership issue of DTLOMS was solved by the Napoleonic system of promotion by merit. Indeed, this system allowed Napoleon, a common soldier not of nobility or birthright, to rise to the highest echelon of leadership in the French Army.<sup>17</sup> With the advent of the levee en masse, the material element of DTLOMS became a problem of logistics and resupply. This problem was solved through the use of foraging as a system of supply. However, this system would only be effective if the nature of soldiers changed. In this, the last element of the DTLOMS, the levee en masse produced conscripted soldiers who believed that they were fighting for a new lifestyle and system of government. The mantra of ‘*Liberte, Egalite, Fraternite* [Liberty, Equality, Fraternity was the motto of the French Revolution],’ provided the motivation to soldiers that convinced them not to desert their fellow comrades in arms. Because of this, the material system of foraging for resupply was possible.<sup>18</sup>

In the example of the Napoleonic system of warfare, each element of the DTLOMS produced a synergistic effect on the other elements of the DTLOMS. Once this synergy began, a new method of warfare was established which was truly a “Revolution in Military Affairs.” The use of DTLOMS as criteria for other RMA is also

possible. While it is beyond the scope of this paper to evaluate each period in history, the DTLOMS criteria can easily be applied to show that the German Blitzkrieg tactics of World War II meets the definition of an RMA. At the same time, the stalemate of World War I occurred precisely because the DTLOMS had not converged to produce the synergy of an RMA.

## **The Goals of this Monograph**

This monograph will answer the question, “can the United States Army apply to the current “prototype brigade” the lessons that were learned during the development and experimentation of the 11<sup>th</sup> Air Assault Division (Test)?” Having established that the criteria of DTLOMS is a valuable tool for evaluating change in military systems, the next step is to apply those criteria to evaluate the changes that occurred in the formation of the 11<sup>th</sup> Air Assault (Test) Division from 1963-1965. In order to accomplish this, a study of the separate elements of DTLOMS will be conducted in order to determine how the 11<sup>th</sup> Air Assault Division reorganized itself and conducted operations during the period. The benchmark for studying the elements of DTLOMS will be the use of airmobility during the Ia Drang campaign of November 1965.

Specifically, this monograph will attempt to answer the following six questions:

1. How did the division develop doctrine to support the transition to airmobile warfare?
2. How did the division determine the proper organization to facilitate warfighting with the airmobile division?
3. How did the division train leaders to support the new doctrine and organization?

4. How did the division conduct field training to certify its soldiers and units in the new tactics?

5. Did building a new force require any specific soldier skills and if so, how were those skills cultivated?

6. How did the division adopt and recommend changes to material and equipment to support the new methods of fighting?

Each of these questions address one aspect of the DTLOMS and will be used to measure change in the 11<sup>th</sup> Air Assault (Test) Division from the beginning in 1963 to the redesignation to the 1<sup>st</sup> Cavalry Division in 1965. Finally, this study will synthesize these changes and determine which lessons learned can be applied to on-going experimentation in the US Army of the 21<sup>st</sup> Century.

## **DoctrineTLOMS**

The US Army Tactical Mobility Requirements Board, commonly referred to as the Howze Board, concluded in their final report on 20 August 1962 that:

The doctrine to support the concepts enunciated by the Report is not difficult to formulate, although a wide departure from present tactical doctrine must be developed for airmobile units and the larger forces incorporating them.<sup>19</sup>

With this conclusion, the report inherently adopted the view that the 11<sup>th</sup> Air Assault Division (Test) would be necessary in order to fully develop the doctrine of airmobility. Along with this conclusion, the Howze Board established the fundamental precepts of airmobility doctrine that was to guide the tactical utilization of the division and its battalions. The Howze report stipulated four different scenarios that they used to evaluate airmobility against, a modern enemy army (Warsaw Pact), an oriental army

(Chinese Communist), an insurgency (Viet Cong) and other threats (Latin America, Africa, etc.).<sup>20</sup> Within these scenarios, the Howze report foresaw that offensive operations would be the dominant type of operations performed by airmobile forces. These operations would be focused on shallow penetrations to seize dominant terrain or enemy positions, with the understanding that the “rougher the terrain, the greater the application of tactical mobility by air.”<sup>21</sup> The report was even more prescriptive in describing the use of airmobility in counterinsurgency operations. Applying the rapid mobility of airmobile forces, the report concluded that a counterinsurgency force would not be required to protect their lines of communications. It could also avoid movement by foot, thus avoiding enemy ambushes.<sup>22</sup> The report summed up the benefits of airmobility by stating that airmobility allowed:

the capability to sustain a force on the battlefield, to maintain integrity, and to quickly concentrate combat power so that ones resources can be applied with such intensity in time and space as to create a superior force at the point of application.<sup>23</sup>

Much of these concepts were directly translated to airmobility doctrine. The 17 September 1963 version of *FM 57-35: Airmobile Operations*, stated that “airmobile forces permit the commander to take advantage of the speed and flexibility of Army aircraft in accomplishing a wide variety of tasks.”<sup>24</sup> The doctrine went further to identify eight types of airmobile offensive operations: movement to contact, meeting engagement, attack against delaying positions, attack against organized positions, attack of a river line, pursuit, counterattack, and relief in place. Likewise, it identified four types of defensive operations.<sup>25</sup>

However, despite the head start that the Howze Board allowed in development of airmobility doctrine, there was a huge difference between what the doctrine allowed and

the practical application of that doctrine at the Ia Drang. This is most evident in the application of fire support for airmobile operations. The timing of artillery in support of airmobile operations was a “split-second affair.”<sup>26</sup> A detailed explanation of the timing of the fire support for LZ X-ray shows how difficult this operation can become:

At 1017, after a brief delay resulting from the too hasty positioning of the artillery pieces at Falcon, the preparatory fires began, thirteen minutes later the leading elements of Company B lifted off the Plei Me airstrip with a thunderous roar in a storm of red dust. With volleys of artillery fire slamming into the objective area, the sixteen Hueys-four platoons of four each-filed southwestward across the midmorning sky at two thousand feet. Two kilometers out, they dropped to treetop level. The aerial rocket artillery gunships meanwhile worked X-ray over for thirty seconds, expending half of their loads, then circled nearby, available on call. The 229<sup>th</sup>’s [Aviation Battalion] escort gunships came next, rockets and machine guns blazing, immediately ahead of the lift ships. As the lead helicopters braked for the assault landing, their door gunners and some of the infantryman fired into the trees and tall grass.<sup>27</sup>

This description shows the complexity associated with an airmobile assault into a hostile territory. Captain Matt Dillon, the Battalion Operations Officer of the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry labeled the integration of fire support into an airmobile assault as the, “hairiest part of any operation.”<sup>28</sup> Despite the complexity associated with this portion of an operation, the doctrine available at the time did not even recognize that fire support might be used in support of operations on a landing zone. Indeed, preparation of a landing zone was identified with such tasks as “locate and mark obstructions or remove them.”<sup>29</sup>

Many of the lessons learned by the 11<sup>th</sup> Air Assault Division (Test) and the 1<sup>st</sup> Cavalry Division were integrated into the following version of *FM 57-35: Airmobile Operations*, published on 30 October 1967, almost two years after the Battle of Ia Drang. This version of the doctrine did not change the general concept of employment for airmobile operations. In fact, the initial pages of the manual are almost a mirror image of the manual’s predecessor. However, this version did become much more specific in

terms of techniques used on the battlefield. Utilizing actual combat photographs of airmobile operations in Vietnam, the manual contained a detailed discussion of command and control aircraft used in airmobile operations, to include types of radios and map configurations inside the helicopter.<sup>30</sup> The manual also added two more types of offensive operations to its repertoire: reconnaissance in force and coordinated attack. More importantly, the manual gave two pages of detailed instructions in the use of fire support for airmobile operations. Landing zone preparation in this manual referred to the use of fire support immediately prior to the actual landing and not simply clearing a landing zone of obstacles. In this, the manual recognized that there were many different forms of fire support that could be used to prepare a landing zone, to include, “aerial or ground artillery, tactical air, armed helicopters, naval gunfire, or any combination of the above.”<sup>31</sup>

As has been shown, there was a definite lag between the development of doctrine and the practical application of airmobile operations by the 11<sup>th</sup> Air Assault Division (Test) and subsequently the 1<sup>st</sup> Cavalry Division in Vietnam. To make up this difference, each unit developed its own standard operating procedures to be applied to airmobile operations. The 11<sup>th</sup> Air Assault Division (Test) standard operating procedures at times even conflicted with published doctrine. An example of this is the division’s understanding that while decentralized execution is the norm at the division and brigade level, because of the vulnerability of company sized elements, command should be centralized at battalion level.<sup>32</sup> The 11<sup>th</sup> Air Assault Division (Test) even went so far as to define terms applicable to airmobile operations in an internal manual entitled *Air Assault Techniques and Procedures*. Two of these terms that were defined by the

division included the terms Landing Zone and Pickup Zone.<sup>33</sup> In some cases, this lack of a comprehensive doctrine had detrimental effects on the execution of airmobile operations. Because of this lack of doctrine, habitually attached aviation units would operate within the confines of the unit they were attached to with the understanding that they would have to operate in a different manner when attached to a different unit. In this case, “every commander instinctively knew that he could do certain things with ‘his’ Hueys that he couldn’t quite do with ‘somebody else’s’.”<sup>34</sup>

The true lesson to be learned from a study of the development of airmobile doctrine is that there must be a quick way to incorporate lessons learned from experimental units into a comprehensive doctrine that can be utilized by the force at large. By the time that the 1967 airmobile manual was published, there were many units operating in Vietnam using airmobile tactics. This list of units included the 101<sup>st</sup> Airborne Division, the 173<sup>rd</sup> Airborne Brigade as well as the 1<sup>st</sup> Cavalry Division and others. When paired with a rotation policy that only allowed leaders to spend one year with the combat units in Vietnam, the need to rapidly assimilate lessons learned into doctrine for the Army at large becomes even more critical. The Howze Board provided the impetus to develop the initial doctrine, which allowed the 11<sup>th</sup> Air Assault Division (Test) to begin their experiments with a strong base of knowledge. However, there was no procedure to then advance the initial doctrine as the 11<sup>th</sup> Air Assault Division (Test) began developing new techniques and procedures used in air assault operations. This is true even though the division was stationed at Fort Benning Georgia, the same location as the proponent for airmobile doctrine.<sup>35</sup> In order to be truly effective, the doctrine must be developed simultaneously with the division’s incorporation of its own lessons learned

into its operations. An examination of the training element of DTLOMS reveals some of the same lessons to be learned.

## **DTrainingLOMS**

The training challenges that the new formation faced were immense. In the Howze Board Final Report, Lieutenant General Howze identified a small component of the problem by stating, “the Army must also contemplate extensive use of aircraft mock-ups, some static and some mounted on truck beds, for the training of troops in airmobility.”<sup>36</sup> However, this statement was inserted into the section entitled “Safety” and indicates the relationship that the Board saw between training and safety. The board continued to discuss the importance of training by saying that, “the pilots themselves must be kept at maximum proficiency by periodic flight over established confidence courses.”<sup>37</sup> It concluded that the Army could utilize mechanical simulators to increase the ability of pilots, especially in the difficult task of auto-rotation.<sup>38</sup>

The Howze board focused on only one small aspect of the training challenge that the 11<sup>th</sup> Air Assault Division (Test) would face during their experimentation. That aspect involved the training and maintaining proficiency in pilots. This factor only scratched the surface of the entire training problem. Other issues included unit training to fight with the new methods, training of individuals in maintenance and other aspects of aircraft, and maintaining proficiency of leaders. A closer examination of each of these factors will highlight the lessons that can be learned from this experience.

The first factor of unit training begins to encompass most of the problems that the division faced. When the 11<sup>th</sup> Air Assault Division (Test) was formed in January, 1963,

it initially began as a division headquarters with only one maneuver battalion assigned to it. That battalion, the 3<sup>rd</sup> battalion, 87<sup>th</sup> Infantry Regiment immediately began a series of training exercises to test new concepts and identify new tactical methods. The battalion was fortunate in that the battalion commander, Lieutenant Colonel J. J. Hennessey, participated in the limited unit tests of the Howze Board while he was stationed at Fort Bragg. His experience provided a boost to the training that his new battalion would undergo at Fort Benning.<sup>39</sup>

Hennessey's battalion began their training in April 1963, with the division having been joined by an aviation battalion, the 227<sup>th</sup> Assault Helicopter Battalion. The battalion initially began training focused at the platoon level, gradually increasing in scope and size through battalion level. By this time, the division total strength was approximately 3000 soldiers, with the division scheduled to increase to full strength in fiscal year 1964.<sup>40</sup>

With Hennessey's battalion leading the way, the division began to receive combat units from the 2<sup>nd</sup> Infantry Division, also stationed at Fort Benning, Georgia. The 3<sup>rd</sup> Battalion, 87<sup>th</sup> Infantry continued their training plan, ensuring that they developed tactical concepts and standard operating procedures that would serve as the basis for the remainder of the division. The more the training continued, the more problems that the units encountered. One of these problems was that of resupply. Major General Kinnard was unhappy with the ability of his support elements to maintain the same pace of operations as that of his combat units. One of the methods that was developed was the positioning of refuel-rearm points that aircraft could return to while executing an operation. These refuel-rearm points were pre-positioned close to where the using units

would have access to them. In order to position them, helicopters were used to move the large fuel containers and soldiers necessary to operate them. Thus was born the beginnings of the modern “forward aerial resupply point (FARP)” system that is still in use in today’s Army.<sup>41</sup>

Another innovation that was developed during these experiments was the use of aerial artillery and artillery fire support on the landing zone. As previously discussed, the integration of artillery into an air assault operation was extremely difficult. Major General Kinnard, using ideas formulated by the Howze Board, began equipping helicopters with rocket launchers. An entire battalion of these specially equipped helicopters was eventually organized and became a normal formation assigned to the Division Artillery unit.<sup>42</sup>

As training progressed, the division established the first test of its new concept of employment. In an exercise known as Air Assault I, the division used Hennessey’s battalion in a full battalion field exercise with the division headquarters and brigade headquarters portraying the remainder of the division. This exercise, conducted over a three week period in Georgia in September 1963, validated the air assault capability at battalion level, proving that a commander could control his battalion and supporting assets in an air assault operation.<sup>43</sup>

The division continued experimenting and developing new techniques throughout the remainder of the year. The division received two brigades from the 2<sup>nd</sup> Infantry Division in an “attached” status. The 2<sup>nd</sup> Infantry Division also assumed all of the administrative activities that units normally conduct in support of the post where they reside. This was instrumental in allowing the 11<sup>th</sup> Air Assault Division (Test) to focus on

training and developing airmobile concepts. This training was to pay off for the division during their final test exercise, Air Assault II.

For Air Assault II, the division deployed to Fort Bragg, North Carolina for a series of maneuvers against the famed 82<sup>nd</sup> Airborne Division. The exercise began on 14 October 1964 and involved over 35,000 personnel from three different divisions, the 11<sup>th</sup> Air Assault Division (Test), the 82<sup>nd</sup> Airborne Division, and the 2<sup>nd</sup> Infantry Division, which provided a cadre to record the results of the exercise. The exercise began in the face of Hurricane Isabel, which limited cloud ceilings and visibility, sometimes down to less than one eighth of a mile.<sup>44</sup> These terrible conditions lasted for the first week of the four week exercise and had the unintended result of showing what helicopters could do in bad weather.

The two divisions sparred for a total of four weeks in offensive, defensive, and retrograde movements. The exercise umpires were under much strain to keep the exercise flowing on the correct timeline, while collecting data on the numerous different tasks that were being carried out simultaneously. After four weeks, the air assault concept was labeled a complete success. Even the commander of the aggressor unit, the 82<sup>nd</sup> Airborne Division stated:

Air assault operations as pioneered on Exercise Air Assault II have a dynamic potential. Seldom do we see a new military concept which can contribute so decisively throughout the entire spectrum of warfare. Certain air assault techniques used during Exercise Air Assault II would be unacceptably hazardous in actual combat. However, these deficiencies can be corrected and do not detract from the validity of the overall concept.<sup>45</sup>

With this backing, as well as the backing of the test community, the air assault concept was accepted as a valid methodology for combat, and efforts were made to include the air assault division into the US Army as a permanent formation.<sup>46</sup>

This training concept had its base in the airmobility field manual published in 1963. That manual recognized that ground commanders must train their units to “participate in airmobile operations [and] must be proficient in ground tactical operations and must obtain maximum combat efficiency . . . they should be capable of planning and executing effective day or night airmobile operations.”<sup>47</sup> This guidance, however, did not go very far towards capturing the methods, tactics, and techniques, that were being developed by the division. Not until the 1967 version of FM 57-35 were battle drills developed for airmobile forces. These detailed battle drills showed the positioning of helicopter gunships in formation, how to approach a landing zone, different types of formations for troop transport aircraft, and command and control procedures.<sup>48</sup> Although many of these techniques were formulated during the tests of the 11<sup>th</sup> Air Assault Division (Test) between 1963 and 1964, it would be a full three years until they were incorporated into doctrine.

Another training challenge of the division was the individual training of the soldiers assigned to the division. Along with helicopters, the division was fielded with new weapons such as the M79 grenade launcher and the Claymore mine. Both of these weapons added considerable ability to the light infantry platoon, but necessitated training to ensure proficiency.<sup>49</sup> Other individual training challenges involved mounting and dismounting on helicopters, preparing equipment to be carried as sling loads (carried in a cargo net or on a pallet attached to the bottom of a helicopter by rope), and the numerous

aircraft maintenance and refueling tasks. The 1963 version of FM 57-35 outlined many of these tasks by stating that commanders were responsible for :

Training including the following: familiarization with Army aircraft, flight safety procedures, preparation of equipment for internal and external transport, familiarization with aerial weapons systems, techniques of assembly and reorganization, air movement, and conduct of airmobile operations.<sup>50</sup>

However, this version did not enunciate techniques to accomplish these tasks. It wasn't until the 1967 version that many of these techniques were fully established and available to the entire Army. The 1967 version specifies load plans, seating arrangements, and rehearsals necessary to conduct air assault operations.<sup>51</sup>

There were other training problems that the 1<sup>st</sup> Cavalry Division would face upon activation and deployment to Vietnam. One of the problems was that the division was issued the new individual weapon system, the M16 rifle, only ten days prior to deployment. Another problem was that the division was not allowed to deploy with any soldier who had less than sixty days left in service. This meant that the division would have to conduct individual training on all of the new replacements that the division received.<sup>52</sup> Both of these problems presented training challenges to the division.

Overall, the division had a number of training challenges that they had to overcome during their experimentation period. This training was facilitated by a "crawl, walk, run" methodology that trained the lowest echelon first and proceeded to the next level. It was also facilitated by having a division, not undergoing any significant testing, available to assist in the daily administrative tasks associated with Fort Benning. The final factor contributing to the success of the division was the ability for units to record their results and pass them on to other units in the division. The success of the division in

developing air assault techniques manifested itself in the after action comments of units in the 1<sup>st</sup> Cavalry Division in battle in Vietnam. In these after action reviews, the units would concentrate on ground tactical matters and not mention air assault techniques or helicopter movements. This demonstrates just how the helicopter had become another method of transportation, no different than the jeep in 1945 or the horse in 1865.<sup>53</sup>

At the same time, there were failings in the ability to distribute the lessons learned throughout the US Army. As more and more units would become airmobile after 1965, it would take until 1967 for the Army to publish a doctrinal manual that established the training techniques and battle drills of an airmobile unit. Associated with the training problem, was the fact that the division lost thirty percent of its personnel immediately prior to deploying to Vietnam, thus creating an individual and leader training problem for almost all units.

All of these lessons learned can be directly applied to the training challenges of building a prototype brigade structure. As the brigade begins training on new equipment and developing new techniques, there must be a way to capture those techniques into Army doctrine. Likewise, any unit undergoing this transition would benefit from having the support that the 11<sup>th</sup> Air Assault Division (Test) experienced in 1963-1964. Closely tied to training is the factor that leadership had on the ability of the division to conduct its new missions.

## **DTLeadershipOMS**

The aspect of leadership has two main components when examining it with respect to development of airmobility concepts. The first aspect is the study of the actual

leaders involved with transforming the 11<sup>th</sup> Air Assault Division (Test). An examination of their latent abilities and future success identifies that the division was “stacked” with above average leadership, which greatly increased the ability to conduct testing and experimentation. The other aspect that must be studied is how that leadership was able to command and control their units with the new equipment and tactics. In this instance, use of command and control helicopters as well as other equipment, greatly enhanced the leadership of the division to conduct operations.

In the first aspect of leadership, it becomes clear that the leaders assigned to the 11<sup>th</sup> Air Assault Division (Test) were of an extremely high caliber. This was initially reflected in the members of the Howze Board that developed the concept of airmobility. The career of Lieutenant General Howze is indicative of the type of officers that were assigned to the Howze Board.

Lieutenant General Howze was commissioned as a member of the old Army Horse Cavalry in 1930. In World War II, he reached the rank of full Colonel and commanded an armor regiment. As a Brigadier General in 1955, Howze became the first Director of Army Aviation. In that position, he qualified as a fixed wing and helicopter pilot. Later, General Howze was assigned as the Commanding General of the 82<sup>nd</sup> Airborne Division, where he began conducting informal experiments with helicopters and mobility. Using a helicopter that he piloted himself, General Howze would “drop in on several companies or batteries in training every day.”<sup>54</sup> This introduction to Army Aviation would prove to be very beneficial when Howze was selected to lead the Howze Board and was one of the factors considered when Howze was appointed to lead the board.

Likewise, the eighteen other members of the Board were also of high quality.

Five of the board members were civilians to include the President of RAND Corporation, a think tank based in Washington, D.C., and an executive with Ford Motor Company. Of the remaining thirteen voting board members, all were General Officers in the grade of Major General or Brigadier General. Of these thirteen, two would retire in the grade of Full General (including General Howze), three would be promoted to Lieutenant General, and the remainder would retire as Major Generals. All of the Brigadier Generals were promoted at least once after serving on the board.<sup>55</sup> Even the Secretary of the Board, Colonel John Norton, would retire as a Lieutenant General.<sup>56</sup>

Likewise, the 11<sup>th</sup> Air Assault Division (Test) was also filled with distinguished soldiers, starting with the Division Commander, Brigadier General Kinnard. General Kinnard, like Howze, became involved early on in the development of helicopter mobility. In 1962, Kinnard served as the Assistant Division Commander (Maneuver) of the 101<sup>st</sup> Airborne Division. In that role, he began exploring with the potential of moving troops with helicopters on the battlefield. His interest:

Led him to become a helicopter pilot and [he] tried a variety of innovative exercises with the 101<sup>st</sup>, including the use of helicopters to land troops on top of buildings for city fighting. Kinnard demonstrated this technique to General Wheeler when the Chief of Staff visited the division at Fort Campbell in the fall of 1962. Later, when Wheeler reached out for a man to command the airmobile test unit, he picked Kinnard – certainly with his background in mind and possibly remembering this graphic example of inventiveness.<sup>57</sup>

Along with Kinnard, many of the other officers of the 11<sup>th</sup> Air Assault Division (Test) were handpicked to serve in the division. This included Lieutenant Colonel J. J. Hennessey, the commander of the 3<sup>rd</sup> Battalion, 187<sup>th</sup> Infantry Regiment, the first battalion formed in the division. Hennessey had previously served as the battle group

commander in the 82<sup>nd</sup> Airborne Division, responsible for conducting the initial airmobility tests of the Howze Board.<sup>58</sup> Hennessey would go on to finish a distinguished career, retiring at the rank of full General in 1979.<sup>59</sup>

By the time that the division was redesignated as the First Cavalry Division, many of the officers had been specially selected by Kinnard and his subordinates, and would go on to have successful careers of their own. An example of this is the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry Regiment, Lieutenant Colonel Hal Moore's battalion. In Moore's battalion, Moore himself would go on to command a brigade in the First Cavalry Division and eventually retire as a Lieutenant General. Moore's operations officer, Captain Gregory (Matt) Dillon would go on to command a brigade at Fort Carson, Colorado and retire as a Colonel. Likewise, of the five company commanders in the battalion, three would retire as Colonels, one would retire as a Lieutenant Colonel, and one would retire, disabled from wounds, in the rank of Major. Moore also had at least three Lieutenants in the battalion who would retire in the grade of Colonel, to include the battalion's lone Medal of Honor recipient, Walter J. Marm.<sup>60</sup> Moore was supported by a superb cast of leaders above him, to include the 3<sup>rd</sup> Brigade, 1<sup>st</sup> Cavalry Division Commander, Colonel Thomas Brown and the Brigade Executive Officer, Major Edward Meyer. Colonel Brown would retire as a Brigadier General and Major Meyer would go on to become the Chief of Staff of the Army and retire as a full General.

Plainly, the 11<sup>th</sup> Air Assault Division (Test) and, therefore, the 1<sup>st</sup> Cavalry Division enjoyed high caliber leadership that only strengthened the ability of the division to conduct the airmobility tests. However, without a methodology of command and control, this leadership would have been unable to exert itself on the division. The new

tactics and techniques of employment required new equipment to assist in the command and control of air assault operations.

The impetus for this new equipment began with the final report of the Howze Board. In that report, the board recognized that the:

increase in tactical mobility through the use of greater numbers of aircraft, the increased tempo of activity characteristic of air assault units, and the extended reach of these units demanded a communications system capable of positive and reliable command and control.<sup>61</sup>

In order to solve this problem, the Board recommended a number of solutions to include more reliable signal communications equipment, improved air traffic control regulations, and improved navigational systems. The Board also recognized that there were "other control problems" to include compatibility between Army, Air Force, and Marine communications systems and adaptability to heavy electronic countermeasures.<sup>62</sup> The Board Report finally recognized the need for assigning aircraft to the lowest possible level in order to facilitate airborne command and control by unit leaders.<sup>63</sup> However, the Board stopped short of recommending a specially designed helicopter to assist in command and control.

For command and control, Lieutenant Colonel Moore had a command and control aircraft available at LZ X-ray. In this helicopter, his battalion operations officer, Captain Dillon, was able to conduct the intricate command and control necessary for fire support preparation of the landing zone. Lieutenant Colonel Moore did not use this helicopter to command and control the battle, preferring to be on the ground with his battalion for command and control.<sup>64</sup>

By the time the 1967 version of *FM 57-35* was published, the Army had developed a specific command and control helicopter to enable commanders to command

their units while airborne. This helicopter was equipped with map boards and specific communications systems that allowed a commander to talk to his subordinates on the ground as well as the pilots and other helicopters in the air. The development of this specially designed helicopter eventually enabled unit leaders to maintain command and control of their units while remaining airborne during a battle.

For the 11<sup>th</sup> Air Assault Division (Test), the strength of the division lay in its leadership. The division was manned with some of the best officers in the Army, many hand-picked for the job by the division commander and his subordinates. Along with these superb leaders, the Howze Board identified the basic elements that were needed to command and control air assault units. With this lead, the division developed many of the command and control techniques that would be later used during Vietnam. However, it is important to note that the division had not resorted to the system of echelons of command in the air, all attempting to “micro-manage” the poor commander on the ground. This system would eventually come into play later in Vietnam as a standard command system.<sup>65</sup> It is a tribute to the type of soldiers that the 11<sup>th</sup> Air Assault Division (Test) had that the leaders understood the importance of personal command. As Lieutenant General Moore stated:

Some commanders used their helicopter as their personal mount. I never believed in that. You had to get on the ground with your troops to see and hear what was happening. You have to soak up firsthand information for your instincts to operate accurately. Besides, it's too easy to be crisp, cool, and detached at 1,500 feet; too easy to demand the impossible of your troops; too easy to make mistakes that are fatal only to those souls far below in the mud, the blood, and the confusion.<sup>66</sup>

Obviously, with this mindset, it is easy to understand why the battalion was so successful in combat. Having studied the effect leadership had on the development of airmobile

concepts, there is now a need to examine how the organization of the division effected its ability to conduct combat at all levels. It was the combination of organization and leadership that significantly contributed to the fighting ability of the division.

## **DTLOrganizationMS**

In 1955, General Lyman Lemnitzer recognized that the US Army was in danger of becoming anachronistic, based on the Eisenhower strategy of “massive retaliation.” His statement that “today it seems to me that the very survival of the Army . . . is at stake,” reflects the concerns of the leadership of the Army during this period of turmoil.<sup>67</sup> The result of these concerns was the development of the “Pentomic” division structure of five battlegroups with five companies each. The name of the new structure, as well as the structure itself, reflected the US Army’s attempt to respond to the nuclear battlefield, while at the same time making itself popular with Congress and the US public. It was an attempt to “sex up the Army”, making it possible to request an increase in resources and manpower.<sup>68</sup>

At the end of the Eisenhower Administration, the US Army began to branch out and study new force structures that were more in keeping with the Kennedy Administration’s belief in future guerrilla warfare and “brushfire wars.” The result of these studies was the ROAD (Reorganization Objective Army Divisions) Division structure. This structure did away with the battle group design of the Pentomic Division and returned to something that more closely resembled the Triangular Division of World War II. However, the new concept included the belief that the imbedded battalions could

be reorganized and interchanged as dictated by the tactical situation. This represented a “radical, far more flexible departure from the pre-World War II prototype.<sup>69</sup>

Along with this restructuring, the Howze Board recommended a parallel restructuring for the airmobile division. General Howze, former commander of the 82<sup>nd</sup> Airborne Division under the Pentomic design, was a great critic of the Pentomic structure. As he viewed it, the Pentomic division, “had obvious weaknesses,” a point that he was sure to correct when recommending the new airmobile division design.<sup>70</sup>

The new structure of the airmobile division closely resembled the ROAD division structure. Under the Howze Board recommendation, the airmobile division included approximately 14,000 soldiers with an aircraft allocation of 459 helicopters and fixed wing airframes. This division was organized into eight infantry battalions with three brigade task force headquarters. The division also included an air cavalry squadron and a division artillery brigade, complete with three 105mm Howitzer battalions, one aerial rocket battalion, and a “Little John” nuclear rocket battalion. The division’s airmobility was provided by the division aviation brigade with one surveillance attack battalion, two assault helicopter battalions, one assault support battalion, and one maintenance support battalion.<sup>71</sup>

The Howze Board structure took the concept of rapidly task organized forces from the ROAD Division by assigning the three brigade task force headquarters to the division without any organic battalions assigned to it. In practice, each brigade would control two or three of these battalions for day to day routine operations, but for specific tactical situations, the brigade’s size could be increased or decreased, as required. The Howze Board acknowledged that this restructuring represented a “rapid acceleration of

the ROAD tailoring concept,” but it was also quick to point out that there were fundamental differences between the proposed air assault division and a standard ROAD division.

These differences were mainly in the equipment and strength of the division. The standard ROAD infantry division was equipped with 3452 vehicles as compared to the 1113 of the air assault division. The Howze Board emphasized that the vehicles remaining in the division must be light enough to allow for air transportation, something that was missing in the vehicles of the ROAD division. For the infantry battalion, there was little difference between the ROAD division and the new formation. This difference was reflected in the addition of a “combat service company (CSC)” that included the majority of the battalion’s crew served weapons. With this structure, the standard air assault rifle company only had direct fire weapons with the battalion’s mortars and anti-tank weapons consolidated in the CSC.<sup>72</sup>

The Howze Board also made a recommendation concerning the formation of an “air cavalry combat brigade.” This brigade would be equipped with one headquarters troop (company sized element) and three air cavalry combat squadrons, with a total of 316 fixed wing and helicopter aircraft. This brigade was structured to provide an aerial combat punch to the ground divisions stationed in Europe. The other structural recommendation from the Howze board included the formation of a “corps aviation brigade.” This brigade closely resembled the air assault division aviation brigade with the exception that it only had one assault helicopter battalion and a general support helicopter battalion, in place of the surveillance/attack battalion. The total number of aircraft in this formation was 207, giving the corps commander the ability to airlift four

ROAD infantry battalions simultaneously.<sup>73</sup> The Board also made recommendations of adding aircraft to the standard ROAD division formations and other minor recommendations, but by far the main part of the force design rested in the air assault division, the air cavalry combat brigade, and the corps aviation brigade.

The Army accepted the Howze Board recommendation and began forming the 11<sup>th</sup> Air Assault Division (Test) along those lines. As previously stated, the division organization grew slowly, beginning with Lieutenant Colonel Hennessey's battalion as the initial formation. From this, elements of the 2<sup>nd</sup> Infantry Division (also stationed at Fort Benning) were added until the division reached a strength of 3,250 soldiers in mid-1963. Along with the division, the Army formed the 10<sup>th</sup> Air Transportation Brigade, under the command of Colonel Delbert L. Bristol. This brigade would provide the bulk of the division's logistical functions, developing the tactics of rearming and refueling in the process.<sup>74</sup>

As the division developed, the formation of the division changed from the original structure proposed by the Howze Board. In 1965, when the division was redesignated as the 1<sup>st</sup> Cavalry Division, the division structure was markedly different from the original pattern established by the Board. The final structure included the original eight infantry battalions, however, three of these battalions were designated as parachute qualified airborne battalions along with their designation as air assault battalions. The division artillery structure had changed to include one "aviation" battery, deleting the "Little John" rocket battalion from the formation. In the divisional cavalry squadron, a mechanized ground troop was added along with the three air cavalry troops of the original design. Other changes to the organization included the addition of a military

police company, a signal battalion, and an engineer battalion. A divisional support command was added to relieve the logistical burden, this formation including the division band, three aircraft maintenance battalions, a medical battalion, a ground maintenance battalion and a supply battalion. The aviation brigade of the original formation was renamed the division aviation group and closely resembled the original corps aviation brigade structure of the Howze report. The final division structure included 15,787 soldiers, 434 aircraft, and 1600 vehicles.<sup>75</sup> The additional vehicles of the division would make the final strength approximately half the number of vehicles as a standard ROAD division, far more than the one-third recommended by the Howze Board.

A smaller change to the divisional structure included the addition of a Pathfinder Detachment, the only such unit in existence in the US Army at the time. This unit was not widely publicized and none of the organizational charts published by the Army reflected the unit. The Pathfinder unit was specifically trained to reconnoiter, establish, and guide helicopters into landing zones , including hot landing zones like LZ X-ray. The 1<sup>st</sup> Cavalry Division Pathfinders did exactly this during the Battle of the Ia Drang. However, by law, after World War II, the reorganization of the services placed the Pathfinder function in the US Air Force. As commander of the the Airborne-Army Aviation Department of Fort Benning, Lieutenant General Tolson restored Pathfinder training. However, the Continental Army Command would not accept Pathfinders into units until the formation of the 11<sup>th</sup> Air Assault Division (Test). Thus the only division to be equipped with a Pathfinder Detachment was the 1<sup>st</sup> Cavalry Division.<sup>76</sup>

In addition to these changes, the standard infantry battalion was changed from the recommendations of the Howze Board. The Howze Board recommended the addition of

a combat service company to the battalion, freeing up the rifle companies of the requirement to man and utilize crew served weapons. In the final organization of the 1<sup>st</sup> Cavalry Division, this company was included, however, each rifle company also had three 81mm mortar squads organic to the company. The organization of D Company (the CSC Company) in the air assault rifle battalion included one reconnaissance platoon, an anti-tank platoon (this was converted to a machine gun platoon prior to departing for Vietnam, because it was felt that the anti-tank platoon would be ineffective in the jungle environment), and a battalion mortar platoon. The rifle battalion also had a headquarters company consisting of the staff and logistical support elements of the battalion.<sup>77</sup>

Again, the effects of the Howze Board can be seen in the design and organization of the 11<sup>th</sup> Air Assault Division (Test) and the final design of the 1<sup>st</sup> Cavalry Division. The Howze Board provided the starting point for development of the 11<sup>th</sup> Air Assault Division (Test). Once experimentation began, the division added and adjusted the original design to develop an organization flexible enough to respond to the demands of the tactical environment, yet effective enough to fight a major battle within two years of its development. Some of the problems with the original design of the division, the most notable problem being the lack of logistical support, were later corrected as the division developed new doctrine and techniques for utilization.

It is important to note that the US Army did not adopt the Howze Board's recommendation for developing an air cavalry combat brigade. Eventually, the Army did adopt an "air cavalry brigade" in name only. To Howze, the fact that the Army did not go along with his original recommendation was a disappointment, stating:

I believe it a great pity that none of these brigades was ever organized; they would have a most exceptional and desirable capability

against either a guerrilla force or a modern tank-heavy force. The air cavalry brigade now in service is very differently organized, not the equivalent at all.<sup>78</sup>

However, despite the fact that the organization was not adopted, the concept of air combat forces fighting against ground mechanized units, as espoused by the Howze Board Report, has evolved into the deep attack concept of our current doctrine. Perhaps this initiative of the Howze Board was simply too ahead of its time to be adopted by the Army. At any rate, the Howze Board did provide the advance work needed to allow air assault divisions to be accepted into the US Army's inventory. The actual material and equipment needed to outfit the division would also require the same impetus.

## DTLOMaterials

During the reorganization of the Army that took place during the 1950's, technology came to the forefront of Army acquisition. It was obvious to many Army leaders that if the Army was to get any money whatsoever during the budget wars, that the Army would have to sell new and exciting technological innovations. The thoughts of Major General John B. Medaris, chief of the Army's missile program, were accepted in many circles within the Army when he stated:

If you put all your energy and effort into justifying these conventional weapons and ammunition . . . I think you are going to get very little money of any kind. It is far easier to justify a budget with modern items that are popular. . . Why don't you accentuate the positive and go with that which is popular, since you cannot get the other stuff anyway?<sup>79</sup>

With this attitude, the Army spent much of its budget on developing such items as nuclear rocket launchers like the Honest John, the Little John, and the Davy Crockett. As the Army proceeded through the fifties, it became apparent that money would eventually

be needed to plus up conventional capabilities. Indeed much of the equipment that the Army had in 1960 was the same equipment that the Army fought the Korean War with, much of it obsolete and in disrepair.

Along with the Howze Board Report on all aspects of airmobility, the Board also did extensive study on the types of equipment that would be necessary to equip the new formations. Obviously, this evaluation centered on helicopters, however, the Board did not limit itself to only making recommendations on purchasing of helicopters. Other equipment that the Board examined included equipment for training, communications, and logistics.

Initially the Howze Board's recommendations for material and equipment were focused on the type and amount of helicopters that the Army should buy to equip airmobile divisions. In the Brief to the President of the Board, appended to the front of the Final Report of the US Army Tactical Mobility Requirements Board, no less than thirteen variations of aircraft were recommended for purchase by the US Army. These aircraft ran the gauntlet from light observation helicopters to heavy lift helicopters (flying cranes). Included in this mix were recommendations for command staff airplanes, reconnaissance airplanes, attack airplanes, and utility airplanes. The Board included a recommendation for how the airplanes were to be armed or equipped. Some of the aircraft that the Board recommended already had US Army designations, such as the UH-1B and the CH-47B. Others were either not fully developed or hadn't been purchased by the Army and therefore did not have official designations. Included in this category were the flying crane and the observation helicopters, both of which would later be purchased and become items of the Army inventory.<sup>80</sup> The light observation helicopter, OH-58, was

so successful that a version of the helicopter is still in use today as the Kiowa Warrior, OH-58D.

Along with the recommendations for purchase of equipment, the Board also recommended that the Army include provisions for five air assault divisions within the next five-year defense plan. With the Board's proposal, the Army would include five air assault divisions, three armored divisions, and four mechanized divisions for a total of sixteen divisions. There would be no airborne divisions included in the plan. In order to equip this force with the requisite number of airframes (459 for each air assault division as well as aircraft for the ROAD divisions and other formations), the Board estimated that it would cost the Army a total of almost eleven billion dollars through 1967. In addition, the Board added a cost of five and one half billion dollars for maintenance and ammunition for the new fleet. The air assault division would be expensive for the Army, costing more over a five year period than a standard ROAD armored division. However, this was justified by the fact that the Defense Department dictated the requirement for increased tactical mobility. The Army's basic proposal was if you want it bad enough, then be prepared to pay for it. Because of the reduction in airborne divisions, the final price tag for the different additional formations was an increase in the Army's budget by eight billion dollars annually through 1967.<sup>81</sup>

However, the Board did not stop at only recommending new aircraft for the force. The Board also made several recommendations for research and development projects for the future. These recommendations ran the gamut from tank killing terminal guidance systems to aerial delivered anti-tank and anti-personnel mines. Other recommendations

included laser range finders and “low level light intensification systems.”<sup>82</sup> Many of these recommendations were acted upon and are in use in the military today.

As the 11<sup>th</sup> Air Assault Division (Test) began acting on these recommendations, many of the airframes became part of the division structure. Along with the 10<sup>th</sup> Air Transportation Brigade, the division was fielded with many of the new helicopters, to include the UH-1B and the CH-47B. Some of these helicopters were outfitted with weapons systems to develop the aerial rocket artillery helicopters.<sup>83</sup> However, the recommendations for numbers of aircraft to be built were slow in being adopted by the US Army. By the time that the 1<sup>st</sup> Cavalry Division was activated, the Army was scrambling to find a suitable number of aircraft to provide for all of its requirements. This was based on the fact that the experimentation conducted by the 11<sup>th</sup> Air Assault Division (Test), verifying the functionality of air assault tactics, was so successful that the Army wanted to equip more than just the 1<sup>st</sup> Cavalry Division with substantial helicopter assets. By the end of 1965, the Army was beginning to take assets from South Vietnamese units in order to equip its own units. Along with the increased need for helicopters in the counterinsurgency role in Vietnam, there was also a need to supply a training base in the United States, a fact that would put a further strain on the Army’s limited airframes.<sup>84</sup>

The final problem with material for the 1<sup>st</sup> Cavalry Division did not rest in its airmobility systems, but instead with its basic soldier needs. Because of the limited amount of time to be redesignated and then prepare for movement to Vietnam, the division was given new equipment deemed essential to fighting in Vietnam without the training required on the new equipment. The most noticeable of these failures was the

adaptation of the M16 rifle as the basic infantryman's weapon. Up until approximately ten days prior to the division deploying to Vietnam, the division was equipped with the standard infantry rifle, the M14. This rifle had been in existence for a long period of time, seeing service in the Korean War in the early 1950's. Again, because of the lack of development of conventional weapons during the fifties, the Army was scrambling to develop a new infantry weapon for the counterinsurgency wars of the 1960's. The answer to this dilemma was the development and fielding of the M16, lighter than it's M14 counterpart, it was deemed better suited for use in a jungle environment. However, with the limited time to train on the new weapon, the division was placed in the position of deploying to a combat environment with most of its soldiers untrained in their basic weapon.<sup>85</sup> Another problem with the rapid deployment to Vietnam was the fact that the division wasn't quite sure what they would need in their new environment. Although some of these problems would be fixed, such as the transition of the anti-tank platoons in the infantry battalions to machine gun platoons, the division still found itself in Vietnam with much equipment that it didn't need (camouflage nets being one example) and without much equipment that it did need (more water trucks in the hot, humid, jungle climate).<sup>86</sup>

The end result of the study of material and equipment for the airmobility concept is familiar with the other categories that have already been examined. The Howze Board provided the initial start point and the experimentation of the 11<sup>th</sup> Air Assault Division (Test), who then modified the equipment as necessary to meet their tactical needs. Without the impetus of the Howze Board, the division would probably not have been able to even begin the initial set of experiments. Although many of the recommendations

concerning numbers and types of aircraft were never implemented by the Army, the Howze Board foresaw the need to increase production lines in each of the recommended aircraft. The problems with equipment and material acquisition for the formation of the 1<sup>st</sup> Cavalry Division stemmed mainly from conventional weapons and not from problems directly related to airmobility. Despite this, the Army as a whole found it difficult to keep up with the rapidly rising requirements for aircraft to fight the insurgents in Vietnam. This problem was also tied to the development of personnel systems and soldier systems, the last category that will be investigated in relation to the development of airmobility.

## **DTLOMSoldier Systems**

The last category that must be investigated with respect to the Army's transition to airmobility is the category of soldier systems. Specifically in this category, the aspect of personnel systems and personnel management must be examined to determine whether there are any lessons learned that can be applied to today's Army. As the US Army grew in complexity and size, the number of different specialties also grew in direct proportion. In 1945, the US Army recorded 1,407 military occupational specialties, a phrase used to classify soldiers into different jobs within the Army. By 1963, this number had grown to 1,559 different specialties. However, that number may be a bit misleading due to the fact that a number of electronics associated specialties were homogenized into one category, in actuality increasing the number of specialities even more.<sup>87</sup> Many of these new specialties were directly related to airmobility and helicopter operations.

The Howze Board made specific recommendations concerning personnel manning and management in their Final Report. These recommendations were organized into three groups based on rank structure: officers, warrant officers, and enlisted soldiers. In the initial Brief to the President of the Board, the aviation personnel requirements, based on a final force structure of five air assault divisions, increased the aviation officer strength from 6,500 to 10,300 from 1962 through 1968, approximately one and one half times the 1963 strength. Enlisted strength was increased during this period from 20,500 to 71,000, representing almost a four-fold increase in the number of soldiers serving in aviation specialties. Perhaps the largest percentage increase was in the strength of warrant officers, those soldiers who would serve as pilots in the new divisions. This strength increased almost five times from 2,200 to 10,300 at the completion of the program.<sup>88</sup>

Along with the changes in gross numbers of aviation personnel, the Board also made recommendations concerning the career management of those personnel. Some of these recommendations were radical for their time, especially in terms of the total percentage of officer to warrant officer end-strength. In this case, the Board recognized that commissioning warrant officers as pilots would free up some officer positions, to be reserved for leadership within the new aviation units. The proposal would also create pilot positions more in line with the civilian aircraft industry. Specifically, the Board recommended:

The aviator population should include officers and warrant officers in approximately equal numbers. Since the warrant officer is not required to have other aviation skills, he may be utilized continuously in a flying assignment. He does not require the military schooling nor other non-aviation training of the officer aviator. He is intended to have a well-developed capability in aviation maintenance in addition to his flying

ability, a characteristic noted as becoming prevalent among civilian light aircraft pilots.<sup>89</sup>

The increase in the number of warrant officers would necessitate a change in the total aggregate percentage of officers to warrant officers as mandated by Congress. The Board recognized the need to enlist the Department of Defense to assist in this change.

The other recommendations that the Board made concerning aviation personnel included an improved management capability in all components of aviation personnel. Specifically, the Board recommended the establishment of an Aviation Personnel Division within the Office of Personnel Operations at the Department of the Army. This office would be responsible for assignment and management of officers and warrant officers. A similar office for enlisted personnel was also recommended.<sup>90</sup>

The Board also recognized the immediate need for an expanded aviation procurement program. This program would be a radical departure from the normal methods of procuring warrant officers in that it would allow enlistees to join the ranks of the warrant officer directly from high school. The Board spelled out this proposal by stating:

Warrant officer pilot trainees currently are recruited from within the active Army, a source which will not be sufficient to meet the expanded trainee requirements. We can undoubtedly enlist capable young men of high school and junior college education into the Army for flight training, and an enlistment program should be developed to this end . . . An expanded procurement program should also permit the retention on active duty as AUS (Army of the United States) warrant officers, of trained officer aviators who retire as officers at twenty years of service.<sup>91</sup>

These two recommendations were extremely radical in the procurement of pilots, and showed how much foresight the Board had into the problem of qualified pilots.

The Board could see the future of aviation and understood that there was a potential for failure, if procurement of sufficient number of pilots to field the five air assault divisions within the five year time frame was not aggressively pursued. However, the Army only fielded one division that qualified for the moniker “air assault.” Despite this, the Army still had a problem with recruitment and retention of pilots in Vietnam. Hand-in-hand with the number of helicopters, the Army could not get enough trained pilots to satisfy its needs in all of the different capacities that the helicopter was filling in Vietnam. The result of this was rotation policies that found aviators constantly returning to Vietnam in much higher numbers than their counterparts in other specialties. By 1965, the pilot shortage was such that “management of aviation assets would soon become a major preoccupation of every senior commander [in the US Army].”<sup>92</sup>

However, there were other personnel problems related to the 11<sup>th</sup> Air Assault Division (Test) and the subsequent 1<sup>st</sup> Cavalry Division. One of the problems resulted from the fact that the division was manned with hand picked soldiers during its formation and experimentation in Fort Benning. While this helped to benefit the division during the experimentation, when the division was activated to go to Vietnam, many of the soldiers were due to rotate or leave the service. Along with the fact that President Johnson did not authorize a call-up of Reserves or a state of national emergency, all soldiers within sixty days of finishing their enlistment were not deployed with the division to Vietnam. The result of this was that the division deployed at seventy percent strength, losing nearly 2700 officers and men, many of them in critical positions such as pilots, crew chiefs, and aviation mechanics.<sup>93</sup> The impact on the 1<sup>st</sup> Battalion, 7<sup>th</sup> Cavalry can be seen from Lieutenant Colonel Moore’s remarks that:

My battalion and every other in the division now began to suffer the consequences of President Johnson's refusal to declare a state of emergency and extend the active-duty tours of draftees and reserve officers. . . Any soldier who had sixty days or less left to serve on his enlistment as of the date of deployment, August 16, must be left behind.

We were sick at heart. We were being shipped off to war sadly understrength, and crippled by the loss of almost a hundred troopers in my battalion alone. The very men who would be the most useful in combat – those who had trained longest in the new techniques of helicopter warfare – were by this order taken away from us. It made no sense then; it makes no sense now.<sup>94</sup>

Like material, the 1<sup>st</sup> Cavalry Division suffered from problems not associated with airmobility in its deployment to Vietnam. Although some of the problems, like lack of trained pilots, would eventually effect the entire Army, and by extension the 1<sup>st</sup> Cavalry Division, the main personnel problems that the 1<sup>st</sup> Cavalry Division faced in Vietnam were more due to overall policy instead of aviation specific policies.

As in the other categories that have been examined, the Howze Board provided the initial springboard for personnel policy that would eventually help to form the 11<sup>th</sup> Air Assault Division (Test). The Howze Board recognized the initial problems that the Army would face and provided aggressive recommendations that could focus on fixing the problems before they began. While not all of these recommendations were accepted, they did provide a start point that the Army could use to further develop the aviation specialties. Taken to its logical extreme, these recommendations formed the basis for the development of the permanent Aviation Branch that serves in the US Army today.

## Conclusions

At 12:50 A. M. on 20 December 1989, eight UH-60A Black Hawk helicopters lifted off into the night sky from Fort Kobbe, Panama towards the landing zone on the

golf course at Fort Amador, Panama. The Black Hawks, carrying soldiers from A and B Company, 1<sup>st</sup> Battalion, 508<sup>th</sup> Parachute Infantry Regiment, were tasked to secure Fort Amador, a joint US and Panamanian enclave and to defeat the 5<sup>th</sup> Infantry Company of the Panamanian Defense Forces (PDF), stationed at Fort Amador. As the helicopters passed over the Panama Canal and banked towards the golf course for landing, they started taking incoming stray fire from the firefight on-going at nearby “La Comandancia,” the PDF headquarters in Panama City. As the helicopters moved toward the landing zone, fire support from an AC-130, a US Air Force cargo plane specifically armed to provide close support for troops on the ground, began pouring fire into the area around the LZ in order to protect the helicopters on the ground. Shortly before 1:00 A.M., the helicopters landed and the infantrymen dismounted and moved to positions opposite the PDF barracks.<sup>95</sup>

This operation stands as a vivid reminder of the longevity and effectiveness of the Howze Board. After twenty six years, the concept using helicopters to transport troops in combat was again employed during Operation Just Cause in Panama. Although some of the technology had changed, such as night vision devices and more effective helicopters, the basic tactical precepts of air assaults remained the same. Just like the 1<sup>st</sup> Cavalry Division at Landing Zone X-ray, the air assault into Fort Amador began with the Howze Board in 1963.

There are other indicators of the effects of the Howze Board on the US Army. The biggest legacy of the Board remains the 101<sup>st</sup> Air Assault Division stationed at Fort Campbell, Kentucky. While its organization has changed over the last twenty years, reflecting changes in technology, the basic concept remains the same, transporting

soldiers by helicopter to achieve tactical success. Other measures of the Board's effectiveness include the development of the Aviation Branch of the US Army, a separate branch that manages all personnel with aviation specialties. Overall, the Board provided a lasting contribution to the US Army; its results are unparalleled in the development of tactical organizations and doctrine.

There are many reasons for this success of the Howze Board. Beginning with the assignment of the members, the Howze Board was loaded with senior ranking General Officers, whose opinion was valued by the US Army and Department of Defense. The Board consisted of thirteen General Officers, headed by the Commanding General of the Army's vaunted Eighteenth Airborne Corps, Lieutenant General Howze. Among the members of the Board were the Assistant Commandants from both the Infantry School at Fort Benning, Georgia and the Armor School at Fort Knox, Kentucky. The inclusion of these two Generals on the Board ensured that the two most powerful combat arms branches of the Army would back any findings the Board made.<sup>96</sup> Like the development of *FM 100-5* in 1976, the Army recognized that any programs put into place must be fully supported by the two major combat arms branches of the Army, or it would be doomed for failure.<sup>97</sup>

The Howze Board also benefited from the support of their superiors. In his cover letter attached to the Board's Final Report, then Commanding General of the United States Continental Army Command (the forerunner of the present day US Army Forces Command), General Herbert E. Powell, stated that he "fully support[ed] the concepts of airmobile operations as developed by the Board."<sup>98</sup> He clarified his position by

recommending that the five air assault divisions program be started immediately and that the personnel programs of the aviation specialties also be adopted.

However, this support was not unexpected given the nature of how the Board began. The impetus for the Board was a letter from the Secretary of Defense, Robert S. McNamara to the Secretary of the Army, in which McNamara suggested that the Army establish a “managing group of selected individuals to direct the review [of tactical mobility] and keep you advised of its progress.”<sup>99</sup> The Secretary of Defense even went so far as to nominate names for the Board members with the first name being Lieutenant General Howze. The letter ended with a stern warning against remaining with the status quo:

I shall be disappointed if the Army’s re-examination merely produces logistics-oriented recommendations to procure more of the same, rather than a plan for implementing fresh and perhaps unorthodox concepts which will give us a significant increase in mobility.<sup>100</sup>

This guidance was reemphasized by the Secretary of the Army in its letter of instruction for the US Army Tactical Mobility Requirements Board. The Secretary specified that the Board, “not be restricted by current limitations on characteristics of organic Army Aircraft, but identify those areas where recommended programs exceed such limitations.”<sup>101</sup> With this type of mandate and support from the highest echelons in the Department of Defense it is little wonder that the Board had a lasting impact on the organization of the US Army.

However, the Board also benefitted from the methodology used to determine its findings. Over a period of less than six months, the Board conducted extensive wargaming and simulations, and was able to couch their recommendations using firm statistical analysis, seemingly irrefutable proof of the efficacy of airmobility. The Final

Report, along with all of the annexes and appendices (many of which are still classified, Top Secret, by the US Army) was required to fit into one standard Army footlocker and be reproduced to three hundred copies. With this requirement, the printing office in Washington D. C. informed the Board that they must have the report by 1 August 1962 in order to meet the deadline of 20 August 1962. The results of this were that the Board only had two months in order to complete their investigations.<sup>102</sup> Despite these limitations, the Final Report was a masterpiece of writing, a fact that helped to make it more supportable by not only the Army but other agencies as well. Its impact was felt over the entire government with no less than Barry Goldwater stating that the report was "probably one of the most brilliantly studied, written and put together papers that I have ever read."<sup>103</sup>

The findings of the Howze Board were more palatable to the Army because of how the report was conducted and because of the support of the Secretary of Defense and Secretary of the Army. The Howze Board created a powerful start point for General Kinnard to begin testing the concept of airmobility with the formation of the 11<sup>th</sup> Air Assault Division (Test). When this division was redesignated as the 1<sup>st</sup> Cavalry Division and deployed to Vietnam, many of its tactical concepts and techniques had been finalized and perfected in months of field exercises. Most of the problems associated with the deployment of the division to Vietnam were not a direct result of the transition to airmobility, but instead were a product of the friction that normally attends any large scale movement of a unit from one continent to another. However, there were problems with respect to the availability of aircraft and pilots, obvious repercussions from attempting to expand the aviation capability of the Army in such a short period.

The major problem associated with execution of the airmobility concept involved the inability to develop a new doctrine quickly that could be passed on to other soldiers being assigned to air assault units. The version of *FM 57-35*, published in 1963 was not nearly robust enough to support the needs of airmobile units. As the 11<sup>th</sup> Air Assault Division (Test) began developing new techniques and procedures, as well as tactical methods, there was no mechanism for recording those techniques into a standard Army doctrine that could permeate the force. It wasn't until 1967 that most of the new techniques were published in an updated form of *FM 57-35*, almost two years after the 1<sup>st</sup> Cavalry Division had entered combat and over four years after the formation of the 11<sup>th</sup> Air Assault Division (Test).

The major lessons that can be translated directly to the development of the "prototype brigades" and medium weight force of the 21<sup>st</sup> Century are that, one, it takes a powerful force, such as a Howze Board type organization, to truly making lasting changes to the US Army and, two, there must be a methodology for recording that change for the entire Army's benefit. The development and use of the Howze Board in changing the US Army serves as a perfect example of how to make lasting and permanent change to a traditionally conservative organization where change is historically glacially slow. The legacy of the Howze Board is still evident today in the formation of the 101<sup>st</sup> Air Assault Division, which continues to serve as a reminder of the powerful impact that the Board has had on the US Army since 1962.

## Endnotes

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<sup>1</sup> General (Retired) Lucian K. Truscott, Jr., *The Twilight of the US Cavalry: Life in the Old Army, 1917-1942* (Lawrence, Kansas: University Press of Kansas, 1989), 22.

<sup>2</sup> Lieutenant General (Retired) Harold K. Moore and Jeff Galloway, *We Were Soldiers Once and Young* (New York, New York: Random House, 1992), 55-64.

<sup>3</sup> George C. Herring, "Ia Drang Valley," in *America's First Battles, 1776-1965*, ed. Charles E. Heller and William A. Stofft (Lawrence, Kansas: University Press of Kansas, 1986), 319.

<sup>4</sup> Moore, 197-198.

<sup>5</sup> Herring, 325.

<sup>6</sup> Combat Studies Institute, "The 11<sup>th</sup> Air Assault Division (Test), 1963-1965", in "Changing the Army" (Fort Leavenworth, Kansas: Command and General Staff College Press, 2000), 29

<sup>7</sup> Ibid., 33.

<sup>8</sup> Truscott, 156-166.

<sup>9</sup> Gunther E. Rothenburg, "Maurice of Nassau, Gustavus Adolphus, Raimondo Montecuccoli, and the Military Revolution of the Seventeenth Century", in *Makers of Modern Strategy From Machiavelli to the Nuclear Age* ed. Peter Paret, (Princeton, New Jersey: Princeton University Press 1986), 36.

<sup>10</sup> John Arquilla, "A New Epoch and Spectrum of Conflict," in *In Athena's Camp: Preparing for Conflict in the Information Age*, eds. John Arquilla and David Ronfeldt, (Santa Monica, California: RAND, 1997), 7.

<sup>11</sup> Jeffery R. Cooper, "Another View of the Revolution in Military Affairs," in *In Athena's Camp: Preparing for Conflict in the Information Age*, eds. John Arquilla and David Ronfeldt, (Santa Monica, California: RAND, 1997), 99.

<sup>12</sup> Ibid., 101.

<sup>13</sup> US Army Training and Doctrine Command, *Tradoc Pam 525-5: Force XXI Operations, A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century*, (Fort Monroe, Virginia: US Army Training and Doctrine Command, 1 August 1994), 4-1. TRADOC uses the DTLOMS to describe the TRADOC "domains". Chapter four of 525-5 explains the application of DTLOMS to the Force XXI experimentation and evaluation, which was just beginning in 1994.

<sup>14</sup> David G. Chandler, *The Campaigns of Napoleon* (New York, New York: Macmillan Publishing Company, 1966), 144-145.

<sup>15</sup> Ibid., 147.

<sup>16</sup> Gunther E. Rothenberg, *The Art of Warfare in the Age of Napoleon* (Bloomington, Indiana: Indiana University Press, 1978), 102.

<sup>17</sup> Chandler, 161.

<sup>18</sup> Ibid., 160.

<sup>19</sup> US Army Tactical Mobility Requirements Board, *Final Report (Unclassified)*, (Fort Belvoir, Virginia: Combat Developments Command, , 20 August 1962), 12.

<sup>20</sup> Ibid. 20-21.

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<sup>21</sup> Ibid., 22-24.

<sup>22</sup> Ibid., 26.

<sup>23</sup> Ibid., 26.

<sup>24</sup> Department of the Army, *FM 57-35: Airmobile Operations* (Washington, D. C.: US Government Printing Office, 17 September 1963), 4.

<sup>25</sup> Ibid., 26-32.

<sup>26</sup> John A. Cash, "Fight at Ia Drang", in *Seven Firefights in Vietnam* (Washington, D. C.: Office of the Chief of Military History, 1970), 10.

<sup>27</sup> Ibid., 11.

<sup>28</sup> Moore, 59.

<sup>29</sup> *FM 57-35*, 48.

<sup>30</sup> Department of the Army, *FM 57-35: Airmobile Operations* (Washington, D. C.: US Government Printing Office, 30 October 1967), 16-17.

<sup>31</sup> Ibid., 44-46.

<sup>32</sup> Major Leon D. Bieri, "An Analysis of the Current Concept for Employment of the Airmobile Division Against Insurgent Forces in an Underdeveloped Area", Masters in Military Arts and Sciences thesis, US Army Command and General Staff College, Fort Leavenworth, Kansas, 1966, 15.

<sup>33</sup> Ibid., 188.

<sup>34</sup> Lieutenant General John J. Tolson, *Vietnam Studies: Airmobility 1961-1971* (Washington, D. C.: US Government Printing Office, 1973), 84. Lieutenant General Tolson served as the Commanding General of the 1<sup>st</sup> Cavalry Division in Vietnam in 1967-1968, earning a Distinguished Service Cross for gallantry in combat. He retired as the Deputy Commanding General of the Continental Army Command (CONARC). As a Colonel, Tolson served in the Army Aviation Concepts Directorate under then Brigadier General Hamilton H. Howze.

<sup>35</sup> *FM 57-35*, 2.

<sup>36</sup> US Tactical Mobility Requirements Board, 57.

<sup>37</sup> Ibid., 57.

<sup>38</sup> Ibid., 58.

<sup>39</sup> John R. Galvin, *Air Assault: The Development of Airmobile Warfare* (New York, New York: Hawthorne Publishers, 1969), 281. General John R. Galvin retired from the US Army as the Supreme Allied Commander Europe in 1992. Prior to that, GEN Galvin served as the Commander in Chief of US Southcom, stationed at Fort Amador, Panama. GEN Galvin served as a plans officer in the G3 shop of 1<sup>st</sup> Cavalry Division in Vietnam from 1966-1967 and later commanded the 1<sup>st</sup> Battalion, 8<sup>th</sup> Cavalry Regiment in Vietnam from 1969-1970.. One of his Division Commanders during this period was Major General John Tolson.

<sup>40</sup> Tolson, 54.

<sup>41</sup> Galvin, 283.

<sup>42</sup> Ibid., 283.

<sup>43</sup> Ibid., 284.

<sup>44</sup> Tolson, 54.

<sup>45</sup> Ibid., 55.

<sup>46</sup> Moore, 13.

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<sup>47</sup> FM 57-35, 17 September 1963, 40.

<sup>48</sup> FM 57-35, October 1967, 68-80.

<sup>49</sup> Herring, 303.

<sup>50</sup> FM 57-35, 17 September 1963, 40.

<sup>51</sup> FM 57-35, October 1967, 81-83

<sup>52</sup> Herring, 307.

<sup>53</sup> Tolson, 84.

<sup>54</sup> General (Retired) Hamilton H. Howze, *A Cavalryman's Story* (Washington, D. C.: Smithsonian Institute Press, 1996), 198.

<sup>55</sup> Julian M. Olejniczak, ed., *The 1994 United States Military Academy Register of Graduates* (West Point, New York: Association of Graduates, 1994), various pages. The Register of Graduates contains biographies of all graduates of the United States Military Academy. Of the thirteen members of the Howze Board, ten were graduates of West Point. Of the remaining three, no information was available to confirm what rank that they retired. The author assumed worst case that none of the remaining three were promoted after the Howze Board. The list of the members of the Howze Board was included in the Final Report of the Board.

<sup>56</sup> Howze, 237.

<sup>57</sup> Galvin, 281.

<sup>58</sup> Ibid., 281.

<sup>59</sup> Olejniczak, 303.

<sup>60</sup> Moore, 348-365.

<sup>61</sup> US Army Tactical Mobility Requirements Board, 32.

<sup>62</sup> Ibid., 33.

<sup>63</sup> Ibid., 34.

<sup>64</sup> Moore, 58.

<sup>65</sup> Martin Van Creveld, *Command in War*, (Cambridge, Massachusetts: Harvard University Press, 1985), 255-256.

<sup>66</sup> Ibid., 40.

<sup>67</sup> A. J. Bacevich, *The Pentomic Era* (Washington, D. C.: The National Defense University Press, 1986), 21.

<sup>68</sup> Major Glen R. Hawkins, *United States Army Force Structure and Force Design Initiatives 1939-1989 (Advance Copy)*, (Washington, D. C.: United States Army Center for Military History, 1990), 35.

<sup>69</sup> Ibid., 45.

<sup>70</sup> Howze, 197.

<sup>71</sup> US Army Tactical Mobility Requirements Board, 35-37.

<sup>72</sup> Ibid., 37-38.

<sup>73</sup> Ibid., 39-42.

<sup>74</sup> John B. Wilson, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington, D. C.: United States Army Center of Military History, 1998), 316.

<sup>75</sup> Hawkins, C-14. Wilson, 317.

<sup>76</sup> Tolson, 82.

<sup>77</sup> Moore, 20.

<sup>78</sup> Howze, 252.

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<sup>79</sup> Bacevich, 72-73.

<sup>80</sup> US Army Tactical Mobility Requirements Board, 2.

<sup>81</sup> Ibid., 4-10.

<sup>82</sup> Ibid., 62-69.

<sup>83</sup> Galvin, 282.

<sup>84</sup> Tolson, 80-84.

<sup>85</sup> Herring, 303-307.

<sup>86</sup> Tolson, 68.

<sup>87</sup> Van Creveld, 234.

<sup>88</sup> US Army Tactical Mobility Requirements Board, 11.

<sup>89</sup> Ibid., 55.

<sup>90</sup> Ibid., 54

<sup>91</sup> Ibid., 55.

<sup>92</sup> Tolson, 84-85.

<sup>93</sup> Herring, 307.

<sup>94</sup> Moore, 25.

<sup>95</sup> Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama* (New York, New York: Lexington Books, 1991), 173-174.

<sup>96</sup> US Army Tactical Mobility Requirements Board, vii-viii.

<sup>97</sup> Major Paul H. Herbert, *Deciding What Has to Be Done: General William E. Depuy and the 1976 Edition of FM 100-5, Operations* (Fort Leavenworth, Kansas: Command and General Staff College, 1988), 52.

<sup>98</sup> General Herbert E. Powell, Fort Monroe, Virginia, to US Army Chief of Staff, Washington D.C., 20 August 1962, US Army Continental Army Command, Fort Monroe, Virginia.

<sup>99</sup> Secretary of Defense Robert J. McNamara, Washington D. C. to Secretary of the Army Elvis J. Stahr, Washington D.C., 19 April 1962, US Department of Defense, Washington D. C.

<sup>100</sup> Ibid.

<sup>101</sup> Secretary of the Army Elvis J. Stahr, Washington D. C. to the Commanding General, United States Continental Army Command, Fort Monroe, Virginia, 28 April 1962, US Department of the Army, Washington, D.C.

<sup>102</sup> Howze, 237.

<sup>103</sup> Ibid., 256.

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